Space Weather Forecast

Issued on Saturday, 19 August 2023 at 13:00 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of isolated Moderate-class X-ray flares and R1 Radio Blackouts throughout.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has remained Low, with the peak flare a mid Common-class flare at 19/0648 UTC from a region in the far southwest of the disc.

There are currently up to nine sunspot regions on the visible disc. All of the current front-sided active regions were either stable or in decay. A new region near the southeast solar horizon may pose a greater risk for significant flares than of late, though is still rather foreshortened in available imagery. All other groups are small and/or simple at this time.

Two Coronal Mass Ejections (CMEs) that were produced late in the UTC day on 18 August have been assessed as clear misses ahead of Earth orbit. A large filament (arc of plasma) eruption evident from around 19/0730 UTC in the far east appears to be just over the limb. As a result no Earth directed CMEs have been determined.

Solar Wind / Geomagnetic Activity: The solar wind suggests Earth is transiting, but now slowly exiting a sector of space characterised by a fast wind of a coronal hole in the far southwest of the solar disc.

Solar wind speeds generally varied between 450-500km/s through much of the period, peaking at 527km/s (Elevated) at 19/0741 UTC, though this was amidst the gradual decline of the solar wind in recent hours. Current speeds are now around 430-450km/s (Slightly Elevated). The associated magnetic field was initially Moderate but became Weak early in the period and has remained so. The important north-south component was Moderately positive at first, though soon became Weak and not spending lengthy periods either co- or anti-aligned with Earth's field (to lesser or greater effect respectively).

The net result of the above solar wind measures was for Quiet to Unsettled geomagnetic activity, peaking with a Kp3 interval in the 2100-2400UTC period.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Activity is most likely to remain Low, but perhaps show an uptick with the arrival of some far-sided groups (that were highly active as they left the Earth-facing side) into the new UTC week.

Solar Wind / Geomagnetic Activity: No Earth-directed CMEs feature in the forecast, and the sole fast wind is the incumbent, but waning one. Chances of isolated Unsettled intervals should fade later in the UTC weekend to otherwise leave a largely Quiet remainder of the forecast into the new UTC working week.

Energetic Particles / Solar Radiation: No solar radiation storms are expected.

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Met Office Space Weather Forecast

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	1	1	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	30	30	30	30
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	2	2	5	5
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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